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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH
1600 TCF TOWER
121 SOUTH EIGHT STREET
MINNEAPOLIS, MN 55402

EXAMINER	
WEISS, HOWARD	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/081,369
Filing Date: February 22, 2002
Appellant(s): COLE ET AL.

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Bradley A. Forrest
Reg. No. 30,837
For Appellant

EXAMINER'S ANSWER
(revised 21 March 2006)

This is in response to the substitute appeal brief filed 2/21/2006 appealing from the Office action mailed 8/31/2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

5,144,397	TOKUDA et al.	9-1992
5,550,373	COLE et al.	7-1996

6,407,439	HIER et al.	6-2002
6,459,484	YOKOI	10-2002
6,483,1 16	KOZLOWSKI et al.	11-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 - 4, 9 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. in view of Tokuda et al.

3. With respect to claims 1 and 47, Cole et al. show (see cover Figure and column 2, line 9 et seq.) a detector for spectroscopic detection (see abstract) with detectors 14 and tunable Fabry-Perot filter 22, 20. Tokuda et al. show a detector (see Figure 12 and column 3, line 15) with stacked detectors with different wavelength sensitivity (see Figure 11) which has enhanced wavelength selectivity (column 2, line 10). It would have been obvious to use the Tokuda et al. detector in the Cole et al. device to improve the wavelength sensitivity. Note that what is passed by the Fabry-Perot is examined.

4. With respect to claim 2, the detectors are stacked.

5. With respect to claim 3, the Cole et al. Fabry-Perot is tunable.

6. With respect to claim 4, the filter is a Fabry-Perot.

7. With respect to claim 9, Cole et al. shows the substrate could be sapphire or glass (column 2, line 24).

8. Claims 5 - 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. in view of Tokuda et al. and further in view of Hier et al. and Koslowski et al.

9. With respect to claims 5 and 6 Cole et al. shows that the device could operate in the visible region (column 2, line 38) Hier et al. show that a programmable multiwavelength detector array operating in the visible and UV (see Figures 2 and 4 and column 2, line 60) could be GaN/AlGaN and could be stacked vertically (column 3, line 67). It would have been obvious to include the materials shown by Hier et al. in the Cole et al. device to provide the visible wavelength and to extend the operating region to shorter wavelengths. Koslowski. et al. show that UV imagers could be formed with AlGaN, GaN and InGaN (table 1, column 5). It would have been obvious to include all the materials shown by Koslowski et al. to provide the widest possible wavelength range to increase the utility of the device.

10. With respect to claims 7 and 8, Koslowski et al. show that the claimed wavelengths can be reached with the materials shown.

11. With respect to claim 12, Hier et al. show (Figure 2 and column 2, line 61) a stacked detector where light enters through the substrate. It would have been obvious to modify the basic device to include light entering through the substrate since all

contacts and contact wires will be directed away from the detectors and will not obscure them.

12. Claims 10, 11, 13 - 17, 19, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. in view of Tokuda et al. and Yokoi.

13. With respect to claims 10, 11, 17 and 23, Cole et al. shows the device can be used to evaluate external sources (see Figure 18 and column 7, line 55). Yokoi shows (see column 1, line 10) that living tissues and cells can be evaluated by using fluorescence spectroscopy using a laser. It would have been obvious to use the Cole et al. device for the application shown by Yokoi to expand its capabilities.

14. With respect to claim 13, as noted by Applicant, charge detectors are standard devices and their use would be obvious. Known charge detectors include CCDS and CMOS imagers.

15. With respect to claims 14 and 15, Cole shows a Fabry-Perot substrate, and a detector substrate. It would be obvious to include the charge detector on another substrate since it is an electronic device and not an optical device and the use of circuitry to operate the device would also be obvious.

16. With respect to claim 16, Cole et al. show two substrates and the detector of Tokuda et al. would be on the second substrate.

17. With respect to claim 19, the Cole et al. filter is a Fabry-Perot.

18. With respect to claim 24, Cole et al. show that both glass and sapphire substrates can be used with the sapphire being appropriate for the growth of GaN

compounds and the use of glass for the filter is a function of the desired transmission and the cost of the substrate and the choice is a design alternative.

19. Claims 20- 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole et al. in view of Tokuda et al. and Yokoi and further in view of Hier et al. and Koslowski et al.

20. With respect to claims 20 and 21, Cole et al. shows that the device could operate in the visible region (column 2, line 38) Hier et al. shows that a programmable multiwavelength detector array operating in the visible and UV (see Figures 2 and 4 and column 2, line 60) could be GaN/AlGaN and could be stacked vertically (column 3, line 67). It would have been obvious to include the materials shown by Hier et al. in the Cole et al. device to provide the visible wavelength and to extend the operating region to shorter wavelengths. Koslowski. et al. show that UV imagers could be formed with AlGaN, GaN and InGaN (table 1, column 5). It would have been obvious to include all the materials shown by Koslowski et al. to provide the widest possible wavelength range to increase the utility of the device.

21. With respect to claim 22, Koslowski et al. show that the claimed wavelengths can be reached with the materials shown.

(10) Response to Argument

At page 10, with respect to claims 1 - 4 and 9, Appellant states (middle second paragraph) that "The purpose of the claimed structure is to detect the entire bands passed. . ." and states that Cole was not faced with detecting a band of radiation that was wider than could be detected by a single type of detector. First, the purpose of the

device has no bearing on claims drawn to a structure and second, note that the language used stating what Cole was not faced with is the language that was deleted from the claim to avoid the 112 rejection. As was noted in the 112 rejection, which should be moot, a detector such as a bolometer, which detects the energy received, is virtually wavelength independent.

At the bottom of page 10, Appellant states that Tokuda et al. is directed to distinguishing between two wavelengths, not detecting a broad spectrum. This comment shows a basic misunderstanding of how a Fabry-Perot filter works. An Appendix is provided which is an except from an optics text that describes the functioning of the Fabry-Perot filter. As is shown, a Fabry-Perot provides a discrete line output as shown in Figure 5.3 of the text. Since a Fabry-Perot filter can be scanned, i.e. the spacing of the plates of the device can be changed, a relatively wide spectral region can be examined by scanning the separation of the plates. Appellant, as shown in Figure 3 of the Specification depicts the output of the filter as a series of discrete lines, similar to that shown by the text in Figure 5.3. Figure 3 of the specification was apparently color coded in the original. The numbers in the box are probably an indication of the Farby-Perot plate separation. One should also compare with Figures 7 and 8 which actually have

the plate separation annotated. Thus we see from this discussion that the Fabry-Perot filter has a narrow output which can be scanned over a wide range of wavelengths. This wide range of wavelengths is limited to the free spectral range of the Fabry-Perot filter which is described in the appendix but the free spectral range is essentially the repeat

distance between the fringes. Note that for a single wavelength there are a number of lines in the output and to avoid ambiguity the only useful region is the free spectral range. This repeat distance is shown in Figure 3 of the Specification, note that there are six curves (see the box) and there are twelve spectral lines. Thus Cole et al., Tokuda et al. and Applicant perform the same function with the Fabry-Perot filter.

At page 11, middle paragraph, Appellant states that there is no reason to combine the references, i.e., Tokuda et al. and Cole et al. and states that improving the wavelength sensitivity is not understood and it is ". . .not the purpose of the presently claimed structures which detect an entire bandwidth passed by a filter." First, the purpose has no bearing and second the claimed structure does not view the entire bandwidth at one time but uses the scanning capability of the Fabry-Perot to scan a range, just as Cole et al. and Tokuda et al. do.

At page 11, last paragraph, Appellant states that Cole does not suggest improving the wavelength sensitivity but as stated in the rejection, it is Tokuda et al. that make the suggestion.

At page 11, last few lines, Appellant states that combining Tokuda et al. with Cole et al. would only result in the ability to distinguish between different frequencies, not to detect high and low bands but detecting different frequencies is the function of the claimed device and the function of the prior art quoted.

At page 12, top paragraph, note that the remarks ". . .wider than can be detected. . ." language is the language that was deleted from the claim to avoid the 112 rejection. As was noted in the 1 12 rejection, which should be moot, a detector such as a bolometer,

which detects the energy received, is virtually wavelength independent. In the same paragraph Appellant states that Cole et al. do not use two detectors, which is true but was never so stated by Examiner, and states that the two detectors do not detect bands but since the Fabry-Perot is used to scan a band the Tokuda et al. device scans a band as well as the claimed device and functions the same way.

With respect to claims 5 - 8 and 12 Appellant states that aside form not disclosing the structure of claim 1, which they do (see above), the reference do not show the claimed relation between the fractions. But note that with y=0, we have AlGaN and GaN which as noted in the rejection are shown by the references (see Koslowski et al., Table 1).

The response to the argument with respect to claim 6, page 13 is addressed above.

With respect to claim 7, Appellant states that Koslowski et al. do not show the range but see Table 1 of Koslowski et al. where the range is shown.

With respect to claim 8, Appellant states that Tokuda et al. require that the detectors have the ability to distinguish different wavelengths, which is true and is also required of the claimed device and that overlapping wavelengths destroy the ability to distinguish but this is not true and one must look at the free spectral range of the Fabry-Perot. Note also that there is nothing in the claimed device that will provide a capability not shown by the references quoted.

Appellant states that with respect to claim 12, last paragraph before 4), it is distinguished for the same reason as claim 10 but Appellant has not addressed claim 10.

At 4), page 13 - 14, Appellant repeats the arguments related to overlap but see the discussion of claim 8 above.

With respect to claims 14 and 15 Appellant states that the obviousness of putting charge detectors on a third substrate is unsupported. First note that the primary substrate contains the Fabry-Perot, which is an optical device and could not have charge detection circuitry in it. The second substrate is a detector made of III-V materials such as GaN and AlGaN which have not, to Examiner's knowledge been used for processing circuitry. Typical processing circuitry is on silicon substrates which would require a third substrate and is clearly obvious. Since Appellant states that a reference should be provided, Appellant's attention is drawn to Koslowski et al. where the substrate that would be the third substrate is shown in the cover Figure. Note also that Cole et al. show that the detectors are connected to external electronics (see Figures 7 and 8, for instance).

With respect to claims 20 - 22, Appellant states that the claimed relationships between the fractions are not shown, but note that with y=0, we have AlGaN and GaN which as noted in the rejection are shown by the references (see Koslowski et al., Table 1).

At page 15, Appellant states that Tokuda et al. require that the detectors have the ability to distinguish different wavelengths, which is true and is also required of the claimed device and that overlapping wavelengths destroy the ability to distinguish but this is not true and one must look at the free spectral range of the Fabry-Perot. Note also that there is nothing in the claimed device that Will provide a capability not shown by the references quoted.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Howard Weiss
Primary Examiner GAU 2814

Conferees:
Howard Weiss
Olik Chaudhuri W.F for O.C
Wael Fahmy W.F